REMARKS

The Office Action dated June 5, 2007 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 33, 37, 38 and 41 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 42-43 have been added. No new matter has been added. Claims 21, 22, 25-26, 28-33, 35 and 37- 43 are submitted for consideration.

Claims 21, 22, 25, 26, 28, 29, 31, 33, 35 and 38-41 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,822,314 to Chater-Lea (hereinafter Chater-Lea) in view of U.S. Patent No. 6,552,998 to Matsunaga (hereinafter Matsunaga). According to the Office Action, Chater-Lea teaches all of the elements of claims 21, 22, 25, 26, 28, 29, 31, 33, 35 and 38-41 except for teaching determining whether a communication was relayed via at least one of the network elements by detecting an increased time delay as compared to a known time delay of mobile stations communicating directly with the base stations and sending an event notice to a network management system, when a presence of at least one of the network elements is initially detected. Therefore, the Office Action combined the teachings of Chater-Lea and Matsunaga in an effort to teach all of the elements of claims 21, 22, 25, 26, 28, 29, 31, 33, 35 and 38-41 and newly added claims 42-43. The rejection is traversed as being based on references that neither teach nor suggest the novel

combination of features clearly recited in claims 21, 22, 25, 26, 28, 29, 31, 33, 35 and 38-41.

Claim 21, upon which claims 22, 25-26 and 28-32 recites a method for detecting network elements relaying communications between a base station and a mobile station in a mobile communication network. The method includes monitoring time delays associated with communications between base stations and mobile stations and calculating a timing advance which corresponds to time delays associated with communications between the base stations and the mobile stations. The method also includes determining whether a communication was relayed via at least one of the network elements by detecting an increased time delay as compared to a known time delay of mobile stations communicating directly with the base stations. The method further includes sending an event notice to a network management system, when a presence of at least one of the network elements is initially detected. A determination is made that the communication is relayed via at least one of the network elements if the timing advance has a value which is greater than a predetermined value.

Claim 33, upon which claims 35 and 37 depend, recites a system for detecting network elements relaying communications between a base transceiver station and a mobile station in a mobile communication network, where time delays between base transceiver stations and mobile stations are monitored. The system includes a monitoring unit configured to monitor communications between a base transceiver

station and a mobile station and a calculating unit configured to calculate a timing advance which corresponds to time delays between the base transceiver stations and the mobile stations. The system also includes a detecting unit configured to detect communications relayed via at least one of the elements by detecting an increased time delay as compared to known time delays of mobile stations communicating directly with the base transceiver station. The system further includes a sending unit configured to send an event notice to a network management system when a presence of at least one of the network elements is initially detected. A determination is made that a communication is relayed via at least one of the network elements if the timing advance has a value which is greater than a predetermined value.

Claim 38, upon which claims 39-40 depend, recites a network element for cellular communication networks including a relay element detection device for configured to identify communication relaying elements by detecting communication time delays between base stations and mobile stations in the cellular communication network. The network element also includes a calculating unit configured to calculate a timing advance which corresponds to time delays between the base stations and the mobile stations. The network element further includes a sending unit configured to send an event notice when a presence of the network element is initially detected. A determination is made that a communication is relayed

via the communication relaying elements if the timing advance has a value which is greater than a predetermined value.

As noted above, Chater-Lea and Matsunaga do not teach or suggest each of the elements of the pending claims.

Chater-Lea discloses a method of operation of a communications system, having first and second communications units for communicating frame divided information via a relay device. The second communications unit transmits a timing signal to the first communications unit. The time signal includes timing information of received timing signals from the first communications unit. The first communications unit calculates a timing offset for the combined timing delay for transmissions to and from the second communications unit via the relay device and transmits the timing offset to the second communications unit. The second communications unit adjusts its timing according to the received timing offset. The communications system includes a frame number offset indicator for performing timing synchronization between the communications units.

Therefore, in Chater-Lea, a base station transmits a first timing signal to a mobile station via a relay device. The mobile station processes the received signal for providing a second timing signal, which is transmitted back to the base station via the relay device. Chater-Lea further discloses that the base station calculates a timing offset indicating a combined timing delay for transmissions from base station to the relay device and then to the mobile station and in the reverse direction, on the basis of the first and the second signal. Then, according to Chater-Lea, the base station transmits the calculated offset to the

mobile station via the relay device. If the offset is required, the mobile station adjusts its processing according to the offset in order to recover transmissions from the base station. Since, the synchronization has been obtained, the base station and the mobile station start an encryption process. See at least Col. 2 lines 3-26, Col. 5 lines 11-23, Col. 6 line 36 - Col. 7 line 51 and Fig. 5 of Chater-Lea.

Matsunaga discloses a two-way communication system that can shorten the system recovery time when a link switching operation between a center station and a relay station occurs over two-way CATV networks, passive optical star networks and the like. A center station measures the round-trip propagation delay of a signal when a subscriber station starts its operation and then sets the transmission delay of the subscriber station so as to equalize the round-trip propagation delay to a fixed system delay. When a link switching operation occurs from a working system to a standby system, the center station measures the round-trip propagation delay of a signal for a subscriber station after the link switching operation and then resets transmission delays of all subscriber stations connected to the relay station to a time based on the difference between the measured delay and the round-trip propagation delay of a signal before the link switching operation.

Applicant submits that the combination of Chater-Lea and Matsunaga does not teach or suggest the combination of elements recited in the pending claims. As noted in the Office Action, Chater-Lea does not teach or suggest determining whether a communication was relayed via a network element by detecting an increased time delay as

compared to a known time delay of mobile stations communicating directly with a base station. The Office Action also noted that Chater-Lea does not teach or suggest sending an event notice to a network management system, when a presence of the network element is initially detected, wherein a determination is made that the communication is relayed via the network element if a timing advance has a value which is greater than a predetermined value.

An embodiment of the present invention is directed to getting information about the operation of the radio repeaters to the network management system. The problem with not getting information about the operation of the radio repeaters to the network management system can lead situations where radio repeaters can be out of operation without an operator knowing the radio repeater is out of operation. An embodiment of the present invention, as recited in the pending claims, solves this problem.

Chater-Lea does not teach or suggest getting information regarding radio repeaters to the network management system. Specifically, Chater-Lea does not teach or suggest determining whether a communication was relayed and sending an event notice to a network management system, as recited in the pending claims. Consequently, Chater-Lea does not disclose a method for detecting network elements relaying communications between a base station and a mobile station in a mobile communication network. Chater-Lea merely discloses a method for obtaining a timing synchronization between a base station and a mobile station.

Matsunaga does not cure any of the deficiencies of Chater-Lea, as noted above. Matsunaga describes a two-way communication system that can shorten the system recovery time when a link switching operation between a center station and a relay station occurs over, for example, CATV networks. In Matsunaga, a center station transmits a round-trip measurement signal to a subscriber station and receives an echo signal from the subscriber station. After that, Matsunaga discloses that the center station determines a delay error on the basis of a predetermined system delay and a round-trip propagation delay, and if the delay error is more than a permissible value, it is updated. See at least Col. 14, line 40-Col. 15 line 18 and Figure 2 of Matsunaga.

Matsunaga also does not teach or suggest the problem solved by the invention, as noted above. There is no teaching or suggestion in Matsunaga of determining whether a communication was relayed via a network equipment by detecting an increased time delay as compared to a known time delay of mobile stations communicating directly with a base station; and sending an event notice to a network management system, when a presence of the network equipment is initially detected, wherein a determination is made that the communication is relayed via the network equipment if a timing advance has a value which is greater than a predetermined value. Instead, Matsunaga teaches that an event notice is transmitted to the subscriber station, not to the network management system, as recited in the pending claims.

The delay is measured in Matsunaga by transmitting a dedicated delay measurement signal. In the present invention, no dedicated measurement signal is needed. See page 5 lines 34-36 of the corresponding PCT application. The round trip delay measurement in Matsunaga is only performed a) at system start, b) when a link switch to a stand-by link happens, or c) when a subscriber station starts its operation. The present invention, on the other hand, discloses monitoring time delays. Monitoring describes a constantly repeated process and is not limited to certain situations/time points, as disclosed in Matsunaga. With round trip delay measurement at certain situations/time points, Matsunaga is unable to detect any change in the round trip delay initiated by the movement of the user (the mobile station), leading for example to the situation that a repeater is added into the transmission path. For wireless networks with moving users, frequent monitoring of the delay is required in order to be able to adapt to the changing delay. The round trip delay measurement at certain situations/time points, as disclosed in Matsunaga, underlines that Matsunaga does not take into account wireless networks with "nomadic" users.

As noted above, both prior art documents disclose measuring the delay in order to utilize the result to adjust the transmission time point of data in order to compensate the delay visible at the remote receiver. This is not the case in the present invention. In the present invention, as recited in the pending claims, the measured delay is used as an indicator for determining if a network element, relaying the transmission, is present between the two network elements performing the measurement. Therefore, Applicant

respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Chater-Lea nor Matsunaga, whether taken singly or combined, teaches or suggests each feature of claims 21, 33, 38 and 42-43 and hence, dependent claims 22, 25, 26, 28, 29, 31, 35and 39-41 thereon.

Claims 30 and 37 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chater-Lea in view of Matsunaga as applied to claim 21 in view of U.S. Patent No. 5,987,513 to Prithviraj (hereinafter Prithviraj). According to the Office Action, Chater-Lea and Matsunaga teach all of the elements of claims 30 and 37 except for teaching monitoring the communication relay via at least one of the network elements to determine various parameters which provide information with respect to network functionality and the network elements. Therefore, the Office Action combined the teachings of Prithviraj with the teachings of Chater-Lea and Matsunaga in an effort to yield all of the elements of claims 30 and 37. The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in claims 30 and 37.

Prithviraj relates to a network management system which enables a user to manage a network using browsers available on remote computer systems. Prithviraj does not cure any of the deficiencies of Chater-Lea and Matsunaga. Specifically, Prithviraj does not teach or suggest determining whether a communication was relayed via a network element by detecting an increased time delay as compared to a known time delay of mobile stations communicating directly with a base station, as recited in claims 21 and 33, upon which claim 30 and 37 depend. Prithviraj also does not teach or suggest sending an event

notice to a network management system, when a presence of the network element is initially detected, wherein a determination is made that the communication is relayed via the network element if a timing advance has a value which is greater than a predetermined value, as recited in claims 21 and 33, upon which claim 30 and 37 depend. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Chater-Lea, Matsunaga nor Prithviraj, whether taken singly or combined, teaches or suggests each feature of claims 21 and 33 and hence, dependent claims 30 and 37 thereon.

Claim 32 was rejected under 35 U.S.C. 103(a) as being unpatentable over Chater-Lea in view of Matsunaga as applied to claim 21 in view of U.S. Patent No. 6,507,741 to Bassirat (hereinafter Bassirat). According to the Office Action, Chater-Lea and Matsunaga teach all of the elements of claim 32 except for teaching least one of the network element is an optical tunneling configuration. Therefore, the Office Action combined the teachings of Bassirat with the teachings of Chater-Lea and Matsunaga in an effort to yield all of the elements of claim 32. The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in claim 32.

Bassirat does not cure any of the deficiencies of Chater-Lea and Matsunaga. Specifically, Bassirat does not teach or suggest determining whether a communication was relayed via a network element by detecting an increased time delay as compared to a known time delay of mobile stations communicating directly with a base station, as recited in claims 21 and 33, upon which claim 30 and 37 depend. Bassirat also does not

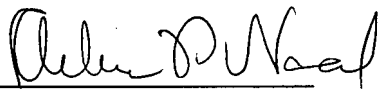
teach or suggest sending an event notice to a network management system, when a presence of the network element is initially detected, wherein a determination is made that the communication is relayed via the network element if a timing advance has a value which is greater than a predetermined value, as recited in claims 21 and 33, upon which claim 30 and 37 depend. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Chater-Lea, Matsunaga nor Bassirat, whether taken singly or combined, teaches or suggests each feature of claims 21 and 33 and hence, dependent claims 30 and 37 thereon.

As noted previously, claims 21, 22, 25-26, 28-33, 35 and 37- 43 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 21, 22, 25-26, 28-33, 35 and 37- 43 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Additional Claim Fee Transmittal
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